of the putative E3 region and the beginning of ORF 6, encoding the fibre protein, and two consensus signals are located within ORF 6 at positions 2575 and 3565. The polyadenylation signal for the fibre protein is located at nucleotide 4877. Six ORFs were identified in the BAV3 genome between the pVIII and the fibre genes, but only four (ORFs 2, 3, 4 and 5) have the potential to encode polypeptides of at least 50 amino acids after an initiation codon (Fig. 7). The amino acid sequence predicted to be encoded by ORF 2 is 307 residues long and contains eight potential N-glycosylation sites (Fig. 7) as well as a hydrophobic sequence which may be a potential transmembrane domain (PLLFAFVLCTGCAVLLTAFGPSILSGT) (SEQ ID NO: 32) between residues 262 and 289. This domain may be a part of the protein homologous to the HAd2 and HAd5 19K E3 glycoprotein (Cladaras & Wold, 1985, supra), and the proposed CAd1 22.2K protein (Dragulev et al., 1991, supra), but ORF 2 does not show appreciable homology with these proteins. The ORF 4 shows approximately 44% identity with the 14.7K E3 protein of HAd5 (Fig. 6 and 8b), which has been shown to prevent lysis of virus-infected mouse cells by tumour necrosis factor (Gooding, L.R., Elmore, L.W., Tollefson, A.E., Brody, H.A. & Wold, W.S.M. (1988) Cell, 53:341-346; Wold, W.S.M. & Gooding, L.R. (1989) Molecular Biology and Medicine, 6:433-452). Analysis of the 14.7K protein sequence from HAd2, -3, -5 and -7 has revealed a highly conserved domain, which in HAd5 lies between amino acid residues 41 and 56 (Horton, T.M., Tollefson, A.E., Wold, W.S.M. & Gooding, L.R. (1990) Journal of Virology, 64:1250-1255). The corresponding region in the BAV3 ORF 4-encoded protein, between amino acids 70 and 85, contains 11 amino acids identical to those of the HAd5 14.7K protein conserved domain (Fig. 8b).

In the claims:

Please cancel claims 1-23, without prejudice or disclaimer.

Please add new claims 24-42, as follows:

24. (New) A replication-defective recombinant bovine adenovirus (BAV) expression vector comprising a bovine adenovirus genome with a deletion of all or part of the E1 region;

said expression vector further comprising an insertion, at the site of the deletion, of a non-BAV nucleotide sequence under the control of an effective promoter.

25. (New) The recombinant BAV expression vector of claim 24 further comprising a deletion of part or all of the E3 region.

26. (New) The recombinant BAV expression vector of claim 25 comprising an insertion at the site of the E3 deletion, of one or more non-BAV nucleotide sequences, said non-BAV nucleotide sequences being under the control of one or more effective promoters.

27. (New) The replication-defective recombinant BAV expression vector of claim 24 wherein the non-BAV nucleotide sequence is a mammalian gene.

28. (New) The replication-defective recombinant BAV expression vector of claim 24 wherein the non-BAV nucleotide sequence is a human gene.

29. (New) A method for introducing and expressing a non-BAV nucleotide sequence in a mammalian cell, wherein the method comprises contacting said mammalian cell with the replication-defective recombinant BAV expression vector according to claim 24.

30. (New) A method for introducing and expressing a non-BAV nucleotide sequence in a mammalian cell, wherein the method comprises contacting said mammalian cell with the replication-defective recombinant BAV expression vector according to claim 26.

31. (New) The method according to claim 29, wherein the non-BAV nucleotide sequence is a mammalian gene.

32. (New) The method according to claim 29, wherein the non-BAV nucleotide sequence is a human gene.

33. (New) The vector of claim 24 wherein said BAV is BAV subgroup 1.

34. (New) A replication-defective recombinant bovine adenovirus (BAV) comprising a bovine adenovirus subgroup 1 genome with a deletion of part or all of the E1 multiple gene

coding region, said deletion being replaced by a heterologous nucleotide sequence coding for a polypeptide produced by a disease causing organism or an antigenic determinant produced by a disease causing organism, wherein said heterologous nucleotide sequence is in association with an effective promoter.

35. (New) The recombinant BAV of claim 34 further comprising a deletion of part or all of E3.

36. (New) A method for eliciting an immune response in a mammalian host to protect against an infection comprising administering a vaccine composition comprising,

(a) a replication-defective recombinant BAV of claim 34 wherein the heterologous nucleotide sequence encodes an antigenic determinant produced by a disease organism; and

(b) a pharmaceutically acceptable excipient.

37. (New) A vaccine for protecting a mammalian host against infection comprising:

(a) a replication-defective recombinant BAV of claim 34 wherein the heterologous nucleotide sequence encodes an antigenic determinant produced by a disease organism; and

(b) a pharmaceutically acceptable excipient.

38. (New) A replication-defective recombinant bovine adenovirus vector (BAV) comprising a bovine adenovirus subgroup 1 genome wherein part or all of the E1 multiple gene coding region and part or all of the E3 multiple gene coding region are deleted and a heterologous nucleotide sequence encoding a foreign gene or fragment thereof is inserted into at least one of the deletions.

39. (New) The vector of claim 34 which is a bovine adenovirus type 3.

40. (New) The vector of claim 38 which is a bovine adenovirus type 3.

41. (New) The replication-defective BAV of claim 24 wherein part or all of another viral gene is deleted.

42. (New) The replication-defective BAV of claim 38 wherein part or all of another viral gene is deleted.